

***Plagiolepis obscuriscapa* Santschi, 1923,
a junior synonym of *Plagiolepis pygmaea* (Latreille, 1798)
(Hymenoptera: Formicidae: Formicinae) and the use of
pigmentation as discriminating character in ant taxonomy**

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Boer, P. *Plagiolepis obscuriscapa* Santschi, 1923, a junior synonym of *Plagiolepis pygmaea* (Latreille, 1798) (Hymenoptera: Formicidae: Formicinae) and the use of pigmentation as discriminating character in ant taxonomy.

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The synonymy of *Plagiolepis obscuriscapa* Santschi, 1923 with *P. pygmaea* (Latreille, 1798) is proposed. The use of pigmentation as only discriminating character in ant taxonomy is criticised.

Introduction

Latreille (1798) indicated in the original description of *Plagiolepis pygmaea* Latreille, 1798 (Formicidae: Formicinae) that he had specimens with pale yellow antenna and legs in front of him ("D'un noir brun. Base des antennes pattes, jaunes pales. Femelle. Presque semblable"). Santschi (1923) described *Plagiolepis pygmaea* Latreille var. *obscuriscapus* based on some worker ants from Salvona, Triëst (Italy) and collected by B. Finzi (fig. 1). This variety is characterized by specimens who only differing in colour from the type: "Noir, le scape, le funicule moins sa base et le milieu des cuisses, d'un brun plus ou moins foncé. Les mandibules et le reste des appendices jaunes (chez le type les appendices sont jaunâtres)". Stärcke (1936) described the gyne based on two specimens from Serj (Croatia). The gyne (fig. 2) is also only differing in colour: "Funicule moins sa base d'un brun assez obscure au lieu de jaune enfumé. Les cuisses sont jaunes". The femur of the simultaneous collected workers were described as more or less "obscurities". Agosti & Collingwood (1987a, b) raised this variety to species, without any argumentation: "femora dusky; queens have the



Fig. 1. Syntype worker of *Plagiolepis obscuriscapa* Santschi.



Fig. 2. First described gyne of *Plagiolepis obscuriscapa* Santschi.

funiculus dark". It is remarkable that Agosti & Collingwood do not mention in this connection the darker pigmented (part of the) antenna of the worker.

Raising a variety to the status of species only on base of colour, is tricky. There are a lot of examples in ant species with a great variety in colour. For example, in related multicoloured species from the same subfamily like *Formica cunicularia* Latreille, 1798 and *F. cinerea* Mayr, 1853. In monocoloured species like *Lasius flavus* (Fabricius, 1781) often a difference in pigmentation density is present, causing darker and lighter parts. There are species which differ from related species by having a darker pigmented femur, like *Temnothorax affinis* (Mayr, 1855), but than there are always other differentiating characters. Moreover, there are always nest populations with a hardly darkened femur or a yellowish femur.

According to Fauna Europeae (Radchenko, 2008) the distribution of *P. pygmaea* ranges from Portugal and the Canary Islands in the west to Iran in the east, the Arabian peninsula in the south and Germany in the north. *P. obscuriscapa* is known from Serbia/Montenegro and Italy; according to Stoch (2003) occurring only in the north and he remarked "Taxon di valore dubbio". The location of the specimen of Croatia is probably the same as mentioned by Radchenko (Fauna Europeae, 2008) from Serbia/Montenegro and the only known specimen from Italy is the type specimen from Triest.

When I examined unidentified *Plagiolepis* specimens in the collections of the National Museum of Natural History, Leiden and the Zoological Museum, Amsterdam I noticed a rather great variability in pigmentation of the appendages. Therefore, I re-examined all the specimens of *P. pygmaea* and *P. obscuriscapa* in both collections and included my collection material. From all specimen the funiculus segments 2 and 3 were quadrate, subequal, each clearly shorter than segment 4. Between the *P. obscuriscapa* specimen and the *P. pygmaea* specimen were no measurable and visible morphological differences.

The following acronyms are used for the examined collections: PB = Collection of Peter Boer, Bergen; NMB = Collection of the Naturhistorisches Museum, Basel; RMNH = Collection of the National Museum of Natural History (Naturalis), Leiden and ZMA = Collection of the Zoological Museum, Amsterdam. The Extended Focus Imaging photographs have been made with an Olympus motorized stereomicroscope SZX12 with AnalySIS Extended Focal Imaging Software.

Plagiolepis pygmaea (Latreille, 1798)

Material examined.— **Austria:** Litorale Strobl, unknown date, leg. Staud[inger] (ZMA). **Belgium:** Mechelen, glasshouse, 7.x.2007, 1 worker, leg. W. Dekoninck (PB). **Croatia:** Senj, 26.vi.1935, 4 workers and 2 gynes (first description of the gyne of *P. obscuriscapa*, fig. 2), leg. A. Stärcke (RMNH; ZMA). **France:** Banyuls, ca. 1950, 2 workers, leg. Kramer (RMNH); Bordighera, iv.1935, 2 workers, leg. Collier, (RMNH) (fig. 3); Nice, unknown date, 2 workers, collector unknown (RMNH); surroundings of Les Beaux, iii.2004, 4 workers, leg. van Orden (PB); Vallee de Liort, 17.iv.2001, 2 workers, leg. J. Noordijk (PB). **Greece:** Olympia, iv.1935, 1 worker, leg. Koch (RMNH); Prespa, 22.v.2007, 2 workers, leg. G. & R. Monsees (PB); Thasos, iv. and x.2006, 10 workers, leg. W. Maassen (PB). **Italy:** Giargnano, Lago d Garda, 29.iv.1964, 1 worker and 6.v.1964, 6 workers, leg. S.J. van Ooststroom (RMNH); Meran, 11.vii.1930, 4 workers, leg. A. Stärcke (RMNH); Salvona, Triest, identification date 1922, 4 workers (syntypes of *P. obscuriscapa*, fig. 1) (NMB); Sestri, Levante, 24.iv.1963, 10 workers, leg. de Leeuw (ZMA); Verona, 27. vii.2004, 5 workers, leg. P. Boer (PB). **Luxemburg:** Ehnen, 1939, 2 workers, 1 gyne, leg. Stumper (RMNH). **Portugal:** Macieira da Lambria, 2.vii.1938, 1 worker, collector unknown (RMNH); Pas de Ferreira, Pe-

Maior, iv.1922, 4 worker, 1 gyne, leg. Neves (RMNH). **Slovenia:** Adlesci, 13.vii.2004, 10 workers, 4 gynes, leg. P. Boer (PB); Podcetrek, unknown date, 10 workers, leg. Jaeger (RMNH). **Switzerland:** Monte Caisano, Maleantone, Ticino, 25.viii.1953, 3 workers, leg. Kramer (RMNH); Mt S. Giorgio, Tessin, 30. iv.1964, 2 workers, leg. S.J. van Ooststroom (RMNH); Tounier, Peney, 3.v.1976, 4 workers, collector unknown (RMNH). **Serbia/Montenegro:** Beograd, vii.1935, 1 worker, leg. MacGillavry (ZMA); Kragujevac, 23.viii.-8.ix.1936, 1 worker, leg. Raven (ZMA); Obrenovne, Beograd, Smederevo, 15-21.vii.1935, 2 workers, leg. MacGillavry (RMNH).

Remarks.— In total 106 specimens were examined, 99 workers and 7 gynes, from 10 countries and 26 different localities. The intensity of the pigmentation shows nearly always a regular pattern: the darkest parts are the thorax and the head, the gaster is slightly paler and the appendages are clearly more pale than the thorax and mostly the femora are darker than the tibiae. The extent of pigmentation of the antennal segments is compared with the colour of the fore tibia and of the pronotum as reference. The pale yellowish brown colour of the tibiae is coded as "1" and the dark brown colour of the pronotum as "5". One of the four syntypes of *P. obscuriscapa* of Santschi was darker than the other three, but 23% of all investigated workers had darker antennal segments than that four syntypes (for example fig. 3, a worker from Bordighera). Only the specimens from Thasos, four of the five workers from Verona and one of the eleven workers from Adlesci have tibia and antennal segments of nearly the same pale colour (25%). The pigmentation of the femur of the middle leg is in all syntype workers coded as 3, in the simultaneous collected workers of Stärcke 3.2 (varies from 2-5) and in all other workers 2.2 (1-5). In the sample of Thasos all workers have uniform pale antennal segments (1-2), in contrary the antennal segments of all workers from Adlesci are uniformly dark, at most in part and with some variation. The average relative pigmentation is illustrated in figure 4. The



Fig. 3. Worker of *Plagiolepis pygmaea* Latreille from France.

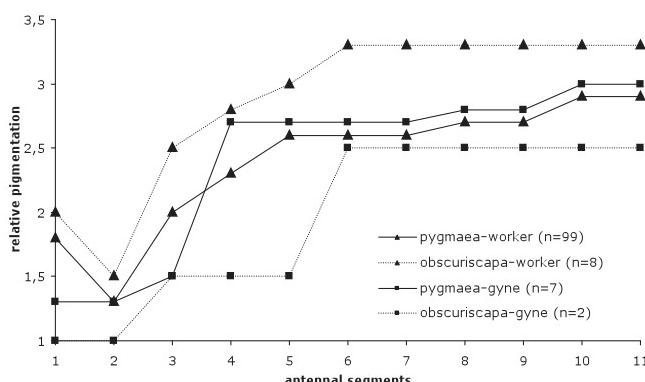


Fig. 4. Average relative pigmentation of the antennal segments of workers and gynes of *P. pygmaea* and *obscuriscapa*.

two gynes of the *P. obscuriscapa* (fig. 2) of Stärcke were not darker than the seven investigated gynes from four different localities. In conclusion, there is a large variety in the pigmentation of the antennal segments. The average pigmentation of all examined workers and gynes was nearly the same as the average pigmentation of the examined syntypes of *P. obscuriscapa*. Therefore, there are no arguments to retain *P. obscuriscapa* a valid species and it becomes a junior synonym of *P. pygmaea*.

The variability of the pigmentation of *P. pygmaea* must be a warning to use pigmentation as the only discriminating character in ant taxonomy, at least in some genera.

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